Editorial

The fundamental physical constants are an essential part of every physicists scientific toolbox. They play an important role in fundamental physics, as well as in various applications. In this volume we consider a broad range of questions related to this topic and in particular to a search for possible variations of the constants, their precision determinations and related questions.

Because of such a broad range there is no and there cannot be any single person who is an expert in the field of fundamental constants. For this reason we believe that multidisciplinary conferences on the variation of constants and related topics should be crucial for an exchange between the sub-fields in order to form a comprehensive understanding. We already organized such a conference in 2003 in Bad Honnef, Germany, with the support of the Wilhelm und Else Heraeus-Stiftung. It was called "Astrophysics, Clocks and Fundamental Constants" and the proceedings were published in 2004. Continuing the series of "AC fundamental constants" meetings, a conference "Atomic Clocks and Fundamental Constants" was organized in 2007. Again, the ACFC 2007 conference took place at the Physikzentrum Bad Honnef with the support of the Wilhelm und Else Heraeus-Stiftung. New impressive results were presented by speakers from various areas of physics.

This special issue is based on presentations at ACFC 2007 and, benefitting from the momentum generated by the meeting and the subsequent discussions, it presents, so we hope, a comprehensive review of the state-of-the-art in the field.

The conference was devoted to fundamental constants in different contexts. That is a frame which easily attracts the interest of various communities from practical experimentalists to fundamental theoreticians. The most advanced technologies may be applied to the development of modern standards as well as to the design of sophisticated detectors for new physics.

We are glad that our conference allows to combine presentations on such important and dynamic areas of physics as quantum optics and observational astrophysics and cosmology, which perhaps are the most interesting today.

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S.G. Karshenboim[1,2]

[1]Max-Planck-Institut für Quantenoptik, 85748 Garching, Germany
[2]D.I. Mendeleev Institute for Metrology (VNIIM), St. Petersburg 190005, Russia

E. Peik

Physikalisch-Technische Bundesanstalt (PTB), Bundesallee 100,
38116 Braunschweig, Germany

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